

DIVISION 33 – UTILITIES

33 1000 WATER UTILITIES

33 1100 Water Utility Distribution Piping

- A. All domestic water distribution piping and appurtenances shall be designed and constructed in accordance with the City Of Mt. Pleasant Standard Specifications which can be located at www.mt-pleasant.org

33 1700 Chilled Water Distribution Piping

- A. Chilled water tie-ins to the campus chilled water system shall be completed between November 1st and April 1st. Procedure to be approved by Owner.
- B. Chilled water piping shall be C900 class water main or HDPE class PVC piping.
- C. Chilled water piping shall not be routed in the campus tunnels and must be buried a minimum depth of 5 feet below grade to top of pipe.
- D. Hot tapping of the chilled water lines is permitted per the following protocol:
 - a. The chilled water flow in the tapped pipe is stopped by shutting off all associated pumps. Pressure is to remain inside the pipe.
 - b. The cutting head to be used is one that is specifically made to tap HDPE/PVC mains.
 - c. The tap will be made in the vertical position under main pipe pressure.
 - d. After the tap is completed, the valve will be flushed to expel any remaining cuttings.
- E. Chilled water lines shall be pressure tested in the same manner as domestic water pressure testing. Refer to the City of Mt. Pleasant Standard Specifications as it related to pressure testing water main.
- F. Refer to Division 23 Heating, Ventilating, and Air-Conditioning (HVAC) for additional Chilled water design requirements.
- G. CMU's consultant for Chilled Water is Fishbeck Thompson Car & Huber, FTCH. All projects that add new or increase existing chilled water load shall be submitted to FTCH prior to the conclusion of design development for a design review and to be included the campus chilled water model.

33 3000 SANITARY SEWERAGE UTILITIES

33 3100 Sanitary Utility Sewerage Piping

- A. All sanitary sewer piping systems shall be designed and constructed in accordance with the City of Mt. Pleasant Standard Specifications which can be located at www.mt-pleasant.org
- B. Jet and flush all Sanitary Sewer pipes between each structure prior to requesting final inspection.

33 3100 Sanitary Utility Sewerage Structures

- A. Vacuum all Sanitary Sewer Structures within the project limits and one structure beyond the project limits prior to requesting final inspection.
- B. All structures shall be pre-cast concrete. At each joint section, the contractor shall apply waterproof mastic and wrap with filter fabric. The contractor shall apply waterproof mastic at the pre-case adjusting rings and wrap with filter fabric.

33 4000 STORM DRAINAGE UTILITIES

33 4001 Storm Water Management

- A. Refer to CMU's Storm Water Management Design and Performance Standards.

33 4100 Storm Drainage Piping

- A. Jet and flush all Storm Drainage pipes between each structure prior to requesting final inspection.

33 4900 Storm Drainage Structures

- A. Vacuum all Storm Drainage Structures within the project limits and one structure beyond the project limits prior to requesting final inspection.
- B. All structures shall be pre-cast concrete. At each joint section, the contractor shall apply waterproof mastic and wrap with filter fabric. The contractor shall apply waterproof mastic at the pre-case adjusting rings and wrap with filter fabric.

33 6000 HYDRONIC AND STEAM ENERGY UTILITIES

33 6001 TUNNEL DESIGN REQUIREMENTS

- A. CMU's consultant for Steam Piping design is Fishbeck Thompson Car & Huber (FTCH). The Architect shall work closely with FTCH regarding the layout of the steam piping so the tunnel design supports the steam and condensate system. All new steam piping in the campus tunnels, up to and including the pressure reducing valves must be submitted to FTCH prior to the conclusion of design development for a design review and be included the campus steam model. This also includes the condensate system from the flash tank and condensate receiver back to the campus tunnels. The AE shall allot 4 weeks from time of notifying FTCH and CMU Mechanical Project Manager, to complete the review and provide a written report. Any design corrections must be included in the 50% Construction Documents. The following design elements must be included with this review:
 - a. Size of all steam and condensate piping including insulation.
 - b. All piping stanchion designs including supports, hangers, rollers, guides, slides etc.
 - c. All anchoring details of steam and condensate piping
 - d. All expansion loops, slip joints etc. or other means of addressing pipe expansion
 - e. Pressure Reducing Valve and configuration
 - f. Condensate Receiver and Pump selection
 - g. All drip legs and trap selection and configuration
 - h. All isolation valves

- B. Tunnel design at a minimum shall meet AASHTO H-20 (HS-20) loading.
- C. Refer to CMU Standard detail sheet "S-001 Tunnel Details" for typical tunnel size, reinforcement, water proofing, drainage, pipe rack, lighting, power, and access requirements.
- D. The consultant shall use the details referenced as the basis to begin their design. The consultant is required to provide a complete design detailing of the tunnel, to include waterproofing, pipe supports and pipe anchoring.
 - a. Do not use metal decking as a form for pouring of the tunnel roof. This provides a path for water to get into the tunnel and rust the metal decking.
 - b. Tunnel shall be sloped to provide drainage
- E. Provide pipe chutes in tunnel to allow for easy access to place larger sections of pipe into the tunnel. Refer to Detail 5 on sheet S-001 Tunnel Details for basic design.
- F. Provide secured access hatch/vent to tunnel. Refer to Detail 4 on Sheet S-001 Tunnel Details for basic design.
- G. Refer to Division 23 Heating, Ventilating, and Air-Conditioning (HVAC) for complete Hydronic design requirements.

33 6300 Steam Energy Distribution

33 6305 Tunnels

- A. Hard hats and flashlights shall be considered minimum required PPE for entry.
- B. Individuals shall not enter the tunnel alone – use the buddy system. Notify CMU Project Manager or PEP administrative team when entering the tunnels and immediately after exiting the tunnels.
- C. All penetrations to the wall of the tunnels require prior approval from the Director of Plant Engineering and Planning and the Director of Energy and Utilities.
- D. All tunnel penetrations shall be in the middle one third of the side wall of the tunnel and properly sealed. Any exceptions to this requirement shall require structural analysis by a professional engineer.
- E. All abandoned holes to the tunnels shall be plugged and sealed to eliminate water penetration.
- F. The tunnels are to support the installation and maintenance of steam, condensate, air, IT and telecom systems. Gas, water, power, storm and sanitary lines shall not be installed in the tunnels unless approved in writing by the Director of Energy and Utilities.
- G. It is recommended that any team planning to add, modify, rearrange or demolish utilities in the tunnel contact the Director of Energy and Utilities during the planning stage to assure the concept is supported and avoid unnecessary rework.

- H. Any team planning to add, modify, rearrange or demolish utilities in the tunnel shall complete a **Utility Tunnel Work Form** and obtain the necessary signatures. The exception to this requirement is like for like replacement of system components such as valves.

33 6306 Abandoned Utilities in the Tunnels

- A. All abandoned utilities shall be removed from the tunnel when the new / replacement system is installed.
- a. Exceptions must be approved in writing by the Director of Energy and Utilities. To assure utilities that have been abandoned in place are easily identifiable the following requirement shall be met.
- i. The utility shall be disconnected at each end to support future efforts to trace and/or remove the utility.
- ii. The utility shall be labeled every 20 feet as follows:
- Utility:
 - Date Abandoned:
 - Project Contact:

For Example

Utility: 4" Steam Line
Date Abandoned: May 3, 2009
Project Contact: Linda Slater

END OF SECTION

DOCUMENT CONTROL PAGE:

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